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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/884,763	06/19/2001	Attila Mekis	Clarendon.5656	2842

7590 12/18/2003
Samuels, Gauthier & Stevens LLP
225 Franklin Street, Suite 3300
Boston, MA 02110

EXAMINER

DOAN, JENNIFER

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 12/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/884,763

Applicant(s)

MEKIS ET AL.

Examiner

Jennifer Doan

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 0601, 0701
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____

DETAILED ACTION

Drawings

1. The drawings, filed on 06/19/2001, are objected.

Specification

2. Applicants' cooperation is requested in correcting any other errors of which applicants may become aware in the specification.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 6, 8, 9, 17-26 are rejected under 35 U.S.C. 102(b) as being anticipated by McLafferty (U.S. Patent 4,135,787).

Regarding claims 1, 2, 6, 8, 9 and 17-26, McLafferty discloses a method of making a low-loss resonator structure comprising steps of providing a resonator structure, the resonator structure including a confining device and a surrounding medium, the resonator structure supporting at least one resonant mode, the resonant mode displaying a near-field pattern in the vicinity of the confining device and a far-field

radiation pattern away from the confining device, the surrounding medium supporting at least one radiation channel into which the resonant mode can couple; and specifically configuring the resonator structure to reduce or increase radiation loss from the resonant mode into at least one of the radiation channels, while keeping the characteristics of the near-field pattern substantially unchanged; wherein the surrounding medium is homogeneous and inhomogeneous; wherein the radiation channel having one or more spatial directions; further the plane is symmetry and/or not symmetry and further wherein the confining device comprising a disk and /or a ring resonators (abstract and column 6, lines 56-62).

McLafferty does not explicitly disclose a resonant mode and radiation channel. However, McLafferty disclose a resonator structure provides the transverse mode and circulates the electromagnetic radiation (in the specification); thus, it inherently would possess some sort of the resonant mode and radiation channel.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over McLafferty as cited above.

McLafferty discloses a method of making an optical device with all the limitations set forth in the claims as discussed above except for the radiation channels having superpositions of at least one spherical and cylindrical. However, it would have been an obvious to employ the radiation channels having superpositions of at least one spherical and cylindrical waves, since such a modification would have involved a mere change in the figure of a component. A change in form or shape is generally recognized as being within the level of ordinary skill in the art. *In re Dailey*, 149 USPQ 47 (CCPA 1976).

8. Claims 12, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over McLafferty as cited above in view of Stewart (U.S. Patent 5,311,605).

McLafferty discloses a method of making an optical device with all the limitations set forth in the claims as discussed above except the confining device includes a waveguide with grating having at least one defect, a waveguide microcavity and a

modification of the local phase shift. Further more, the waveguide with grating having at least one defect, the waveguide microcavity and the modification of the local phase shift are well known in the art as taught by Stewart. Stewart teaches (see figure 1) a waveguide (1) with grating (7) having at least one defect and modifying the local phase shift (column 2, lines 59-66). Such an element would advantageously provide a low loss and good thermal stability. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the McLafferty device with a waveguide having a grating with at least one defect and a waveguide microcavity to modify the local phase shift (accordance with the teaching of Stewart). Doing so would be desirable to obtain a better device having a low loss and good thermal stability.

9. Claims 3-5, 7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over McLafferty as cited above in view of Villeneuve et al. (U.S. Patent 6,130,969).

McLafferty discloses a method of making an optical device with all the limitations set forth in the claims as discussed above except for a modification of the geometry and/or refractive index of the device as recited in claim 3. Further more, the step of the modification of the geometry and/or refractive index of the device are well known in the art as taught by the Villeneuve et al. Villeneuve et al. teach the step of the modification of the geometry and/or refractive index of the device in column 2, lines 1-6 for obtaining a highly efficient resonator system. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of making the optical device of McLafferty with a modification of the geometry and/or

making the optical device of McLafferty with a modification of the geometry and/or refractive index of the device (accordance with the teaching of Villeneuve et al.). Doing so would beneficially obtain a highly efficient resonator system.

McLafferty discloses a method of making an optical device with all the limitations set forth in the claims as discussed above except for the confining device comprising a photonic crystal slab and operating using index confinement effects, photonic crystal band gap effects or a combination of both as recited in claims 7 and 16. Further more, the confining device comprising a photonic crystal slab and operating using index confinement effects, photonic crystal band gap effects or a combination of both are well known in the art as taught by Villeneuve et al. Villeneuve et al. teach a photonic crystal slab, a photonic band gap and a confinement effects in figures 1-4 and 21 to obtain a highly efficient resonator system. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the McLafferty device with a photonic crystal slab, a photonic band gap and a confinement effects (accordance with the teaching of Villeneuve et al.). Doing so would beneficially obtain a highly efficient resonator system.

10. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over McLafferty as cited above in view of Stewart as cited above, further in view of Villeneuve et al. (U.S. Patent 6,130,969).

McLafferty discloses a method of making an optical device with all the limitations set forth in the claims as discussed above except for a modification of the dielectric constant. Further more, the step of the modification of the dielectric constant is well

known in the art as taught by the Villeneuve et al. Villeneuve et al. teach the step of the modification of the dielectric constant in column 2, lines 1-6. Such an element would advantageously provide a highly efficient resonator system. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of making the optical device of McLafferty with a modification of the dielectric constant (accordance with the teaching of Villeneuve et al.). Doing so would beneficially obtain a highly efficient resonator system.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Grann et al. (U.S. Patent 6,035,089) disclose a resonant grating structure. And Birks et al. (U.S. Patent 6,334,019) disclose a photonic crystal fiber.

12. The prior art documents submitted by applicant in the Information Disclosure Statements filed on 06/19/2001 and 07/30/2001, have all been considered and made of record (note the attached copy of form PTO-1449).

13. Any inquiry concerning the merits of this communication should be directed to Examiner Jennifer Doan whose telephone number is (703) 308-6179. The examiner can normally be reached on Monday to Thursday from 6:00am to 3:30pm, second Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick, can be reached on (703) 308-4819. The fax phone

Application/Control Number: 09/884,763

Page 8

Art Unit: 2874

number for the organization where this application or proceeding is assigned is (703) 308-7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Jennifer Doan

JD

December 12, 2003

Akmal
AKM ENAYET ULLAH
PRIMARY EXAMINER